



# **NOAA's Ecosystem Approach To Management**

**NOS Science Seminar**

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# NOAA's Ecosystem Definition

An **ecosystem** is:

a geographically specified system of organisms (**including humans**), and the environment and the processes that control its dynamics.

The environment is the biological, chemical, physical and **social conditions** that surround organisms





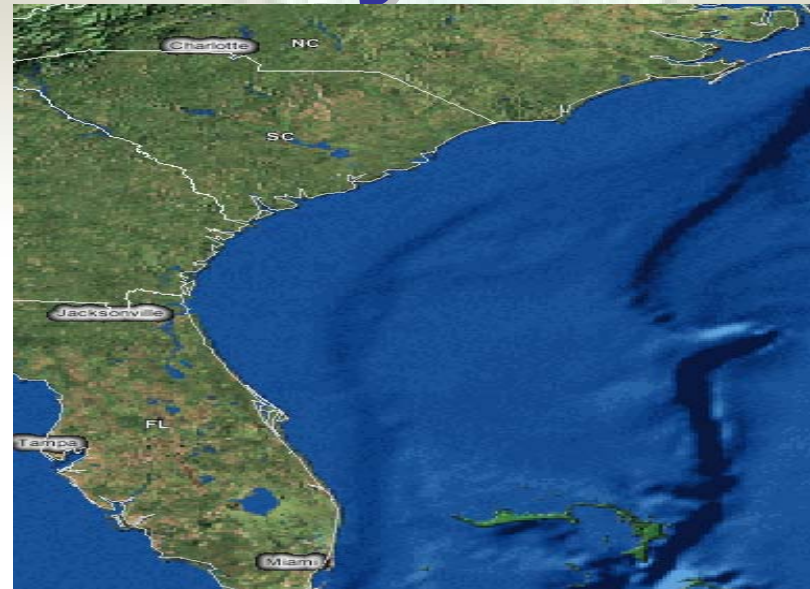
# Outline

- **Why Ecosystem Approaches to Management**
- **Federal EAM Efforts and Governance**
- **NOAA Ecosystem Goal and EAM**
- **Ecosystem Boundaries**
- **Ecosystem Indicators of Ecological Health and Human Use**
- **EAM Key Messages**

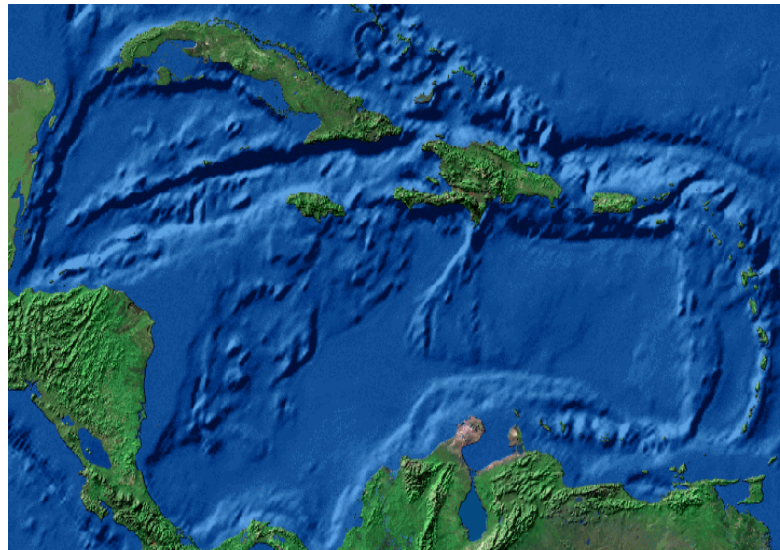
# NOAA Regional Ecosystems



**Northeast Shelf**



**Southeast Shelf**



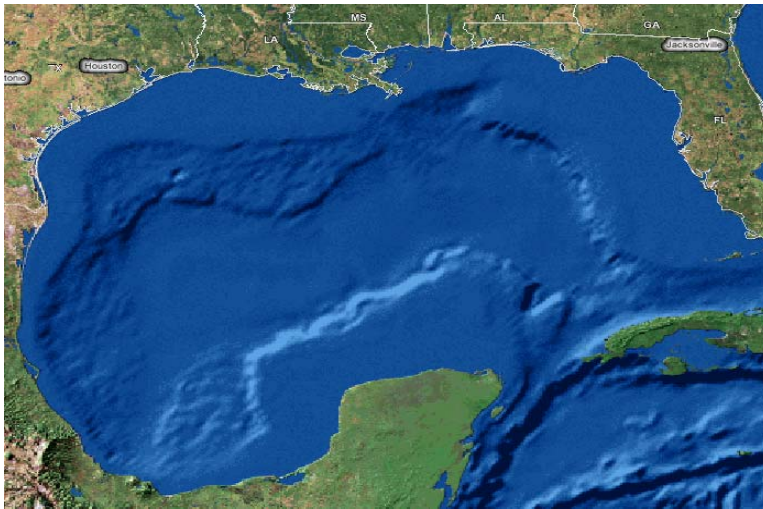
**Caribbean**



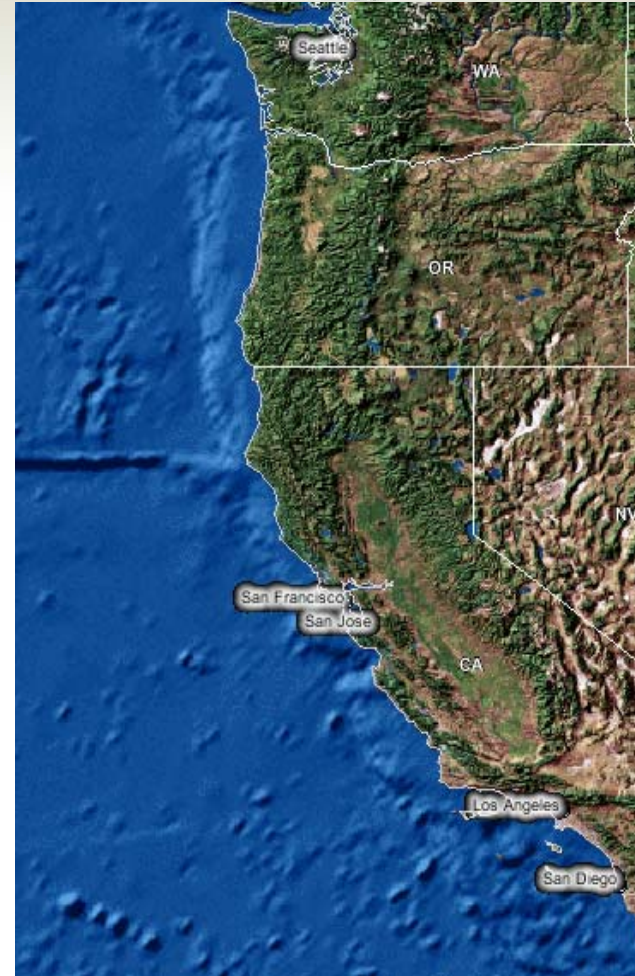
# NOAA Regional Ecosystems



**Great Lakes**



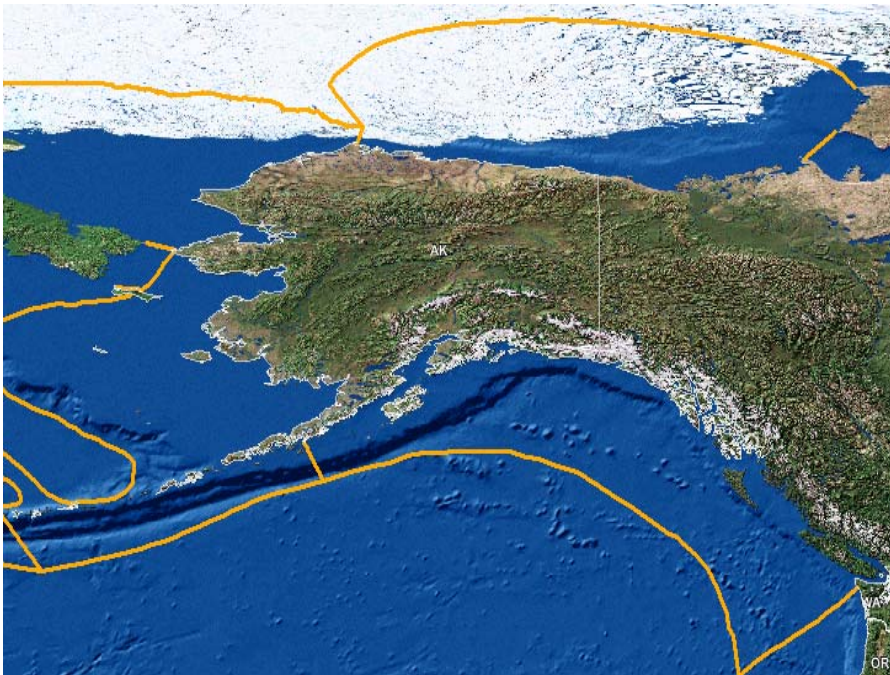
**Gulf of Mexico**



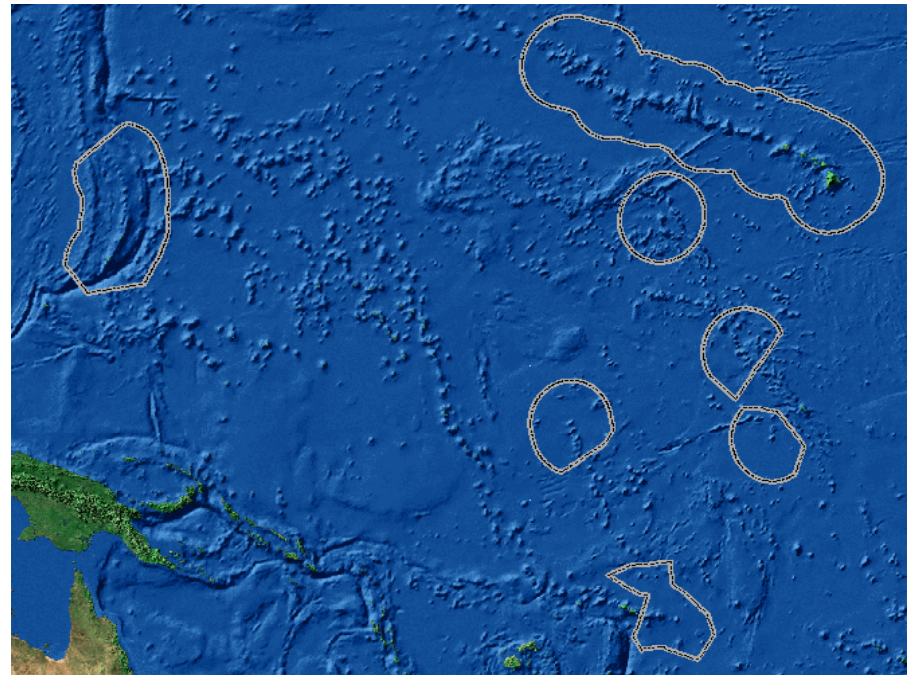
**California Current**



# NOAA Regional Ecosystems



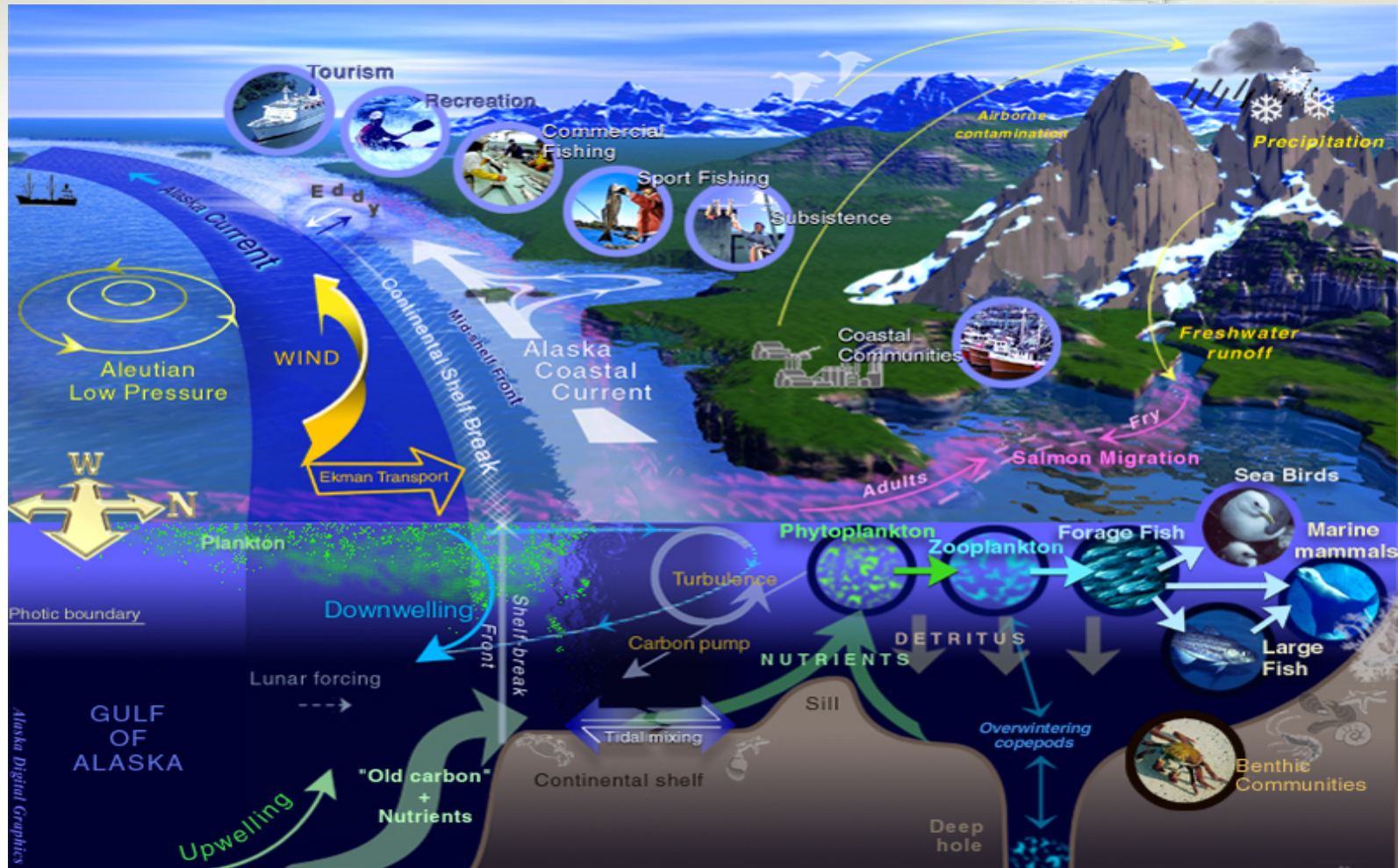
**Alaskan Ecosystem Complex**



**Pacific Island  
Ecosystem Complex** <sup>6</sup>



# Ecosystem Approach to Management



An example ecosystem complexity

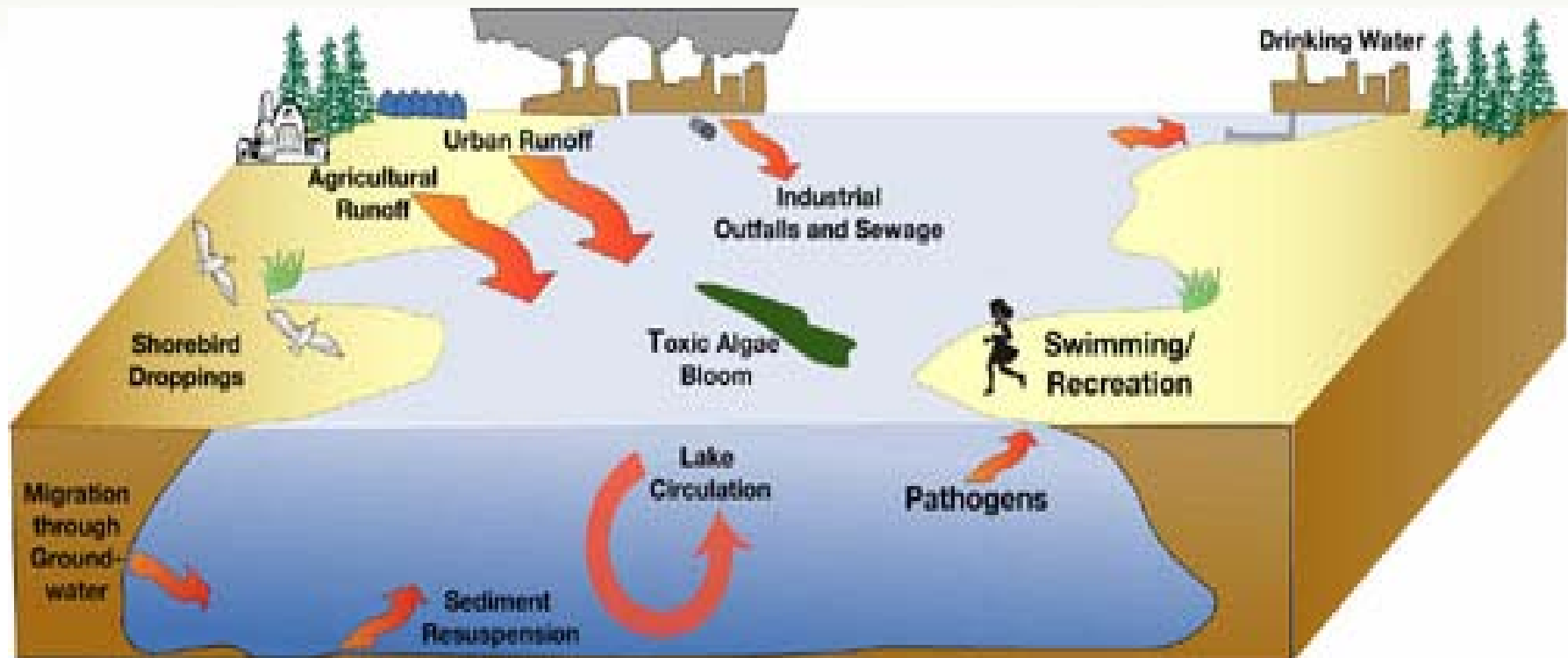


# Ecosystem Approach to Management

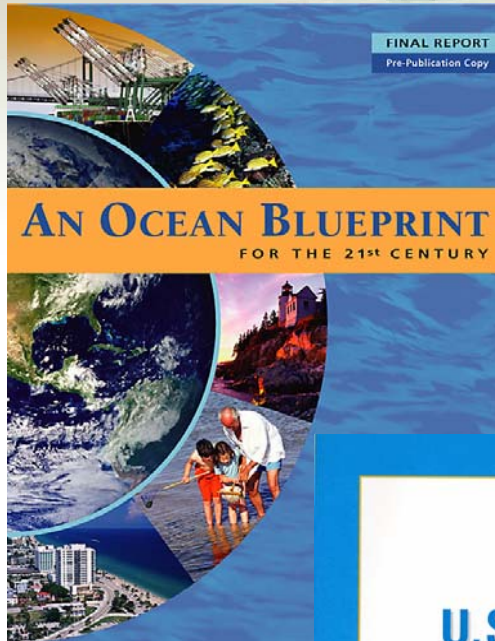




# Ecosystem Approach to Management

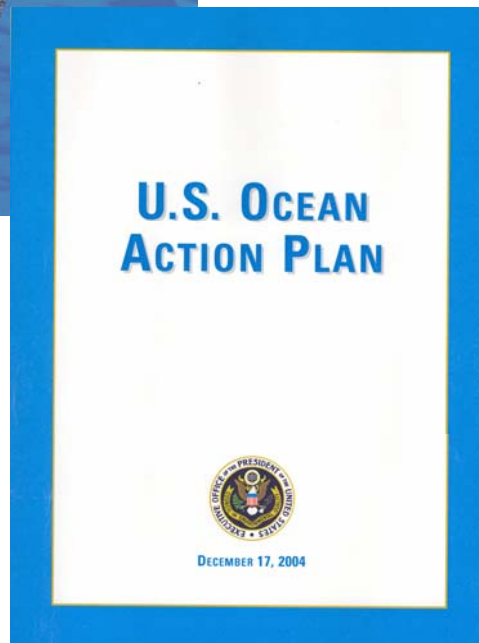


# Federal EAM Stimulus



## U.S. Commission on Ocean Policy

- Better coordination and integration in managing our nations coasts and oceans
- Ecosystem based management to improve coastal and marine resource management

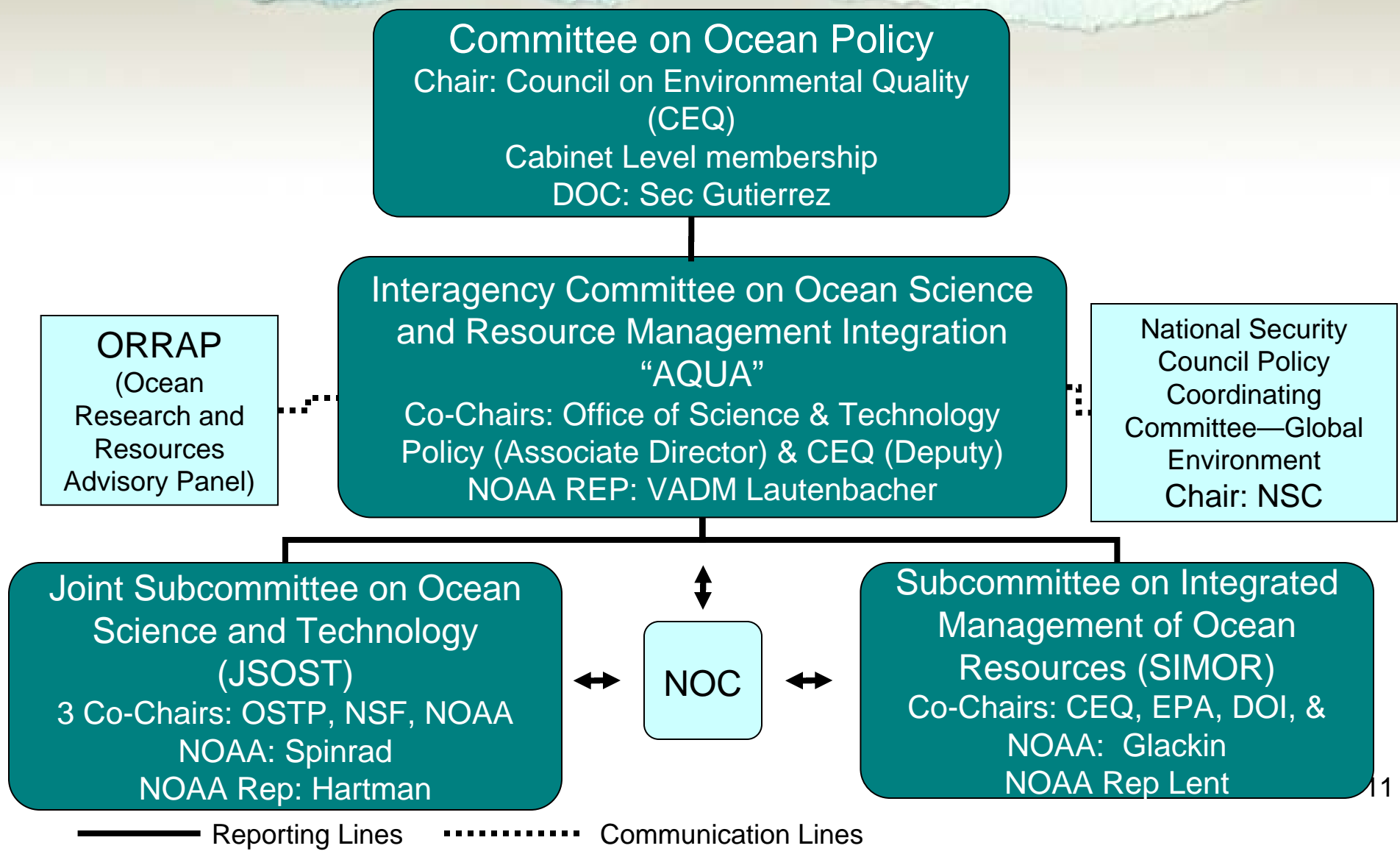


## President's Ocean Action Plan

- Ecosystem approach to management
- Committed to Gulf of Mexico and Great Lakes partnership
- Cooperative Conservation
- Established a new governance structure



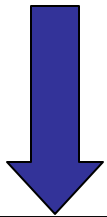
# Coordinated Ocean Governance Structure



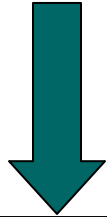
# NOAA's Strategic Goals

## NOAA's Vision:

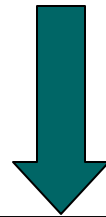
An informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions



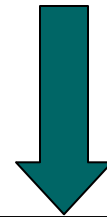
**Ecosystem**



**Climate**



**Weather and  
Water**



**Transportation  
and  
Commerce**



# Ecosystem Goal Programs

Nine Programs Directly Support NOAA's Ecosystem Goal:

## **Habitat**

Garry Mayer

## **Corals**

David Kennedy

## **Coastal & Marine Resources**

Doug Brown

## **Ecosystem Observations**

Steve Murawski

## **Protected Species**

Phil Williams

## **Fisheries Management**

Galen Tromble

## **Ecosystem Research**

Leon Cammen

## **Aquaculture**

Michael Rubino

## **Enforcement**

Dale Jones



# **NOAA Strategic Plan**

## **Ecosystem Goal Mission**

- **Protect, restore and manage the use of coastal and ocean resources through an ecosystem approach to management.**

## **Outcomes**

- **Healthy and productive coastal and marine ecosystems that benefit society.**
- **A well informed public that acts as a steward of coastal and marine ecosystems.**



# **NOAA Strategic Plan**

## **Ecosystem Goal Strategies**

**Engage and collaborate with our partners to achieve regional objectives by:**

- **Delineating regional ecosystems**
- **Developing a suite of ecological and socio-economic ecosystem indicators**
- **Implementing cooperative strategies to improve regional ecosystem health**

**Plus additional strategies to:**

- **Manage uses of ecosystems**
- **Improve ecosystem models and understanding**
- **Improve ecosystem observations to track ecological and socio-economic indicators**
- **Enhancing outreach and education efforts**
- **Improve international coordination and partnerships**

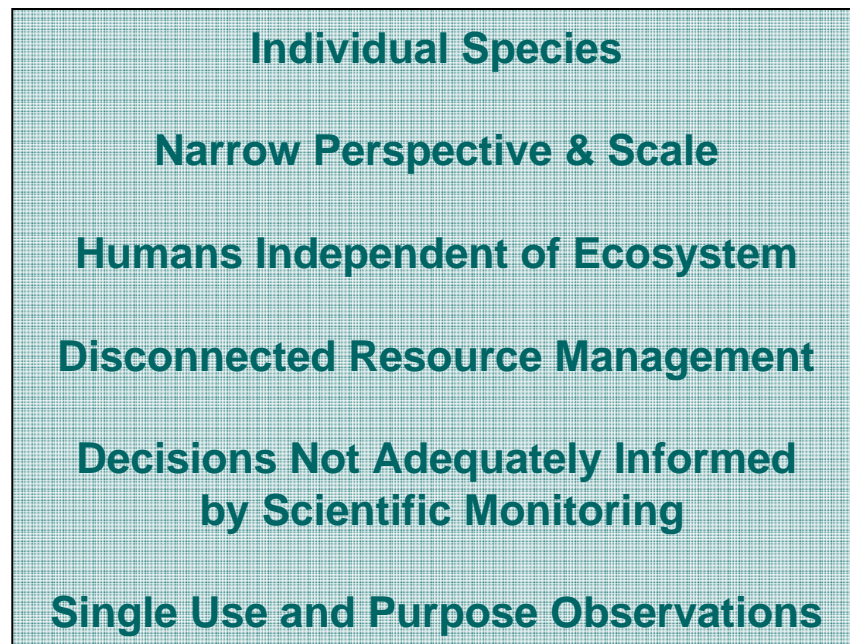
# NOAA's Characteristics of EAM

## An ecosystem approach to management:

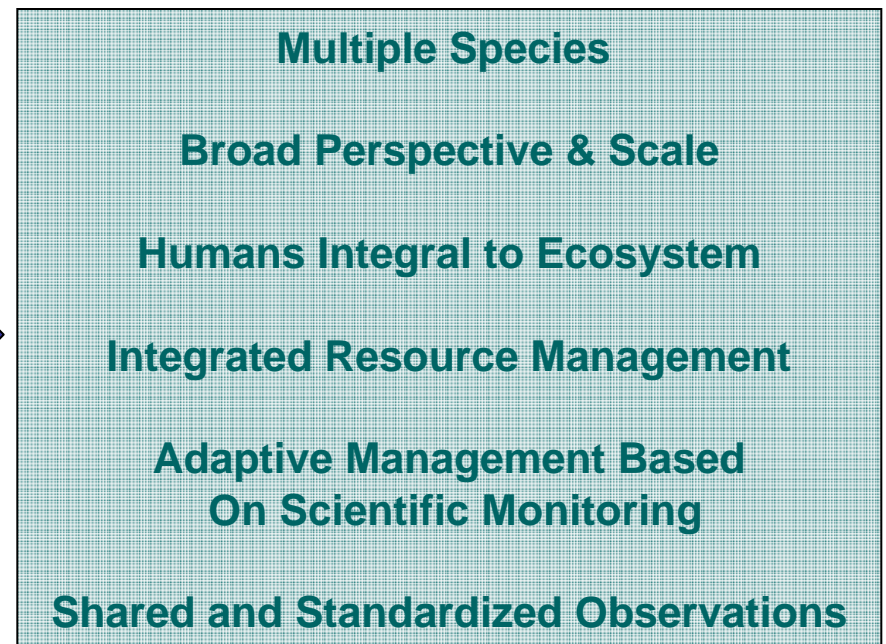
- Adaptive
- Collaborative
- Incremental
- Geographically Specific
- Accounts for ecosystem knowledge and uncertainty
- Considers multiple external factors
- Strives to balance diverse societal objectives

# Legislative Mandates: A Paradigm Shift

## Current Mandates



## Future Mandates

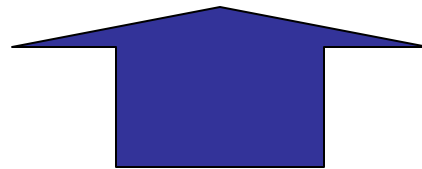




# Elements of an Ecosystem Approach to Management

## MISSION

Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management



### Ecosystem Goal Strategy

Integration and Outreach

Observe and Characterize

Research and Modeling

Management and Stewardship

# Integration and Outreach

Improve internal and external coordination on a regional scale

- Form NOAA regional teams and conduct regional ecosystem stakeholders workshop
- Develop common set of ecosystem health and human use indicators
- Identify sub-ecoregions, discuss inland boundary issues
- Evolve regional EAM collaborative mechanisms
- Well informed public to act as stewards



# Observe and Characterize

Evaluate changes in environmental conditions of regional coastal and marine resources and gain an understanding of the conditions, their causes and consequences to inform management.

- Economic survey and assessments across regions
- Characterize habitats that provide critical ecosystem functions
- Expand monitoring/observing systems beyond boundaries of NERRS and National Marine Sanctuaries to focus on ecosystems
- Expand knowledge of fish and protected species status and forecasts based on ecosystem approach



# Research and Modeling

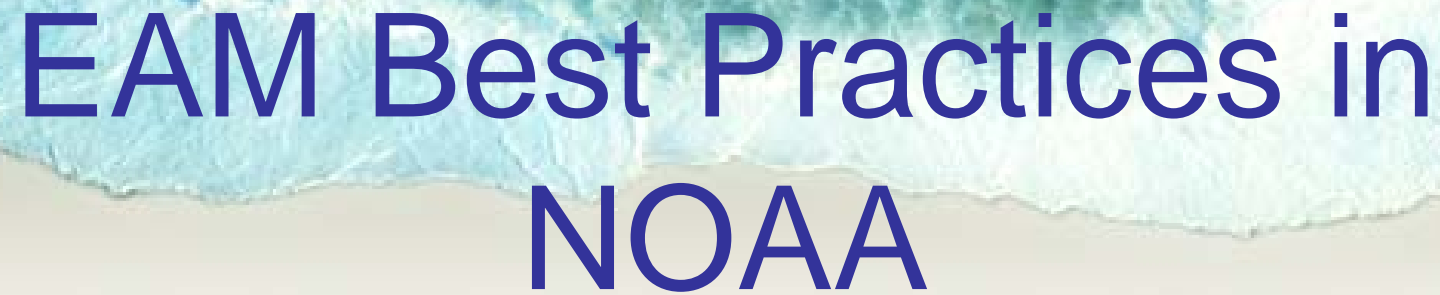
Apply a multi-disciplinary and geographically focused research approach to improve the scientific basis for regional ecosystem decisions.

- Complete regional ecosystem science plans through collaborative processes
- Identify causes and impacts of changes to ecosystem conditions.
- Develop forecasts to predict ecological and socioeconomic impacts.
- Develop, improve, and deliver tools and technologies supporting ecosystem based management.

# Management and Stewardship

Identify, negotiate and implement strategies to protect, restore and sustain healthy and productive use of regional ecosystems. Increase public awareness and involvement to benefit and improve the health of the ecosystems.


- Incorporate advanced knowledge of ecosystem connectivity into NOAA resource management activities, and encourage this with partners (e.g., states)
- Management decisions based on agreed upon ecosystem health indicators
- Balance ecosystem sustainability both biologically and socio-economically



# EAM Best Practices in NOAA

- The Ecosystem Goal Team conducted a data call to determine where NOAA has been involved in ecosystem approaches to management based on NOAA's definition
- Primary focus of the survey was to identify places where NOAA has been actively involved in EAM within the last 5 years.
- 58 responses have been received to date





# EAM Best Practices in NOAA

- Conservation of the Bering Sea/Aleutian Islands and the Gulf of Alaska marine resources
- U.S. Antarctic Marine Living Resources (AMLR) Program
- Elkhorn Slough Tidal Wetland Plan
- South Florida Ecosystem Restoration Task Force
- Habitat Restoration in Louisiana
- Coral Reef Task Force – Local Action Strategies

# **EAM Best Practices Inventory Lessons Learned**

- **Full, open public participation of all stakeholders and partners is essential**
- **Develop objective, measurable scientific criteria**
- **Goals and objectives need to be well defined**
- **Processes or indicators for measuring progress towards objectives need to be agreed upon**
- **Develop cooperative means to share resources (information, people, and funding) among project partners more easily**
- **Consider the full range of biological, economic, and sociological factors in developing policy recommendations**
- **Develop explicit framework for decision making**



# **NOAA's EAM Challenges**

- **Advancing regional approaches with a national framework**
- **Coordination and integration of observing activities with IOOS**
- **Promote collaborative regional science planning**
- **Indicators: develop a uniform set of national ecosystem indicators**
- **Need to build collaboration with partners and stakeholders**





# Emerging Priorities

- **Integrated Plan of Operations for Mercury in the Gulf of Mexico**
- **Oceans and Human Health**
- **Collaborative Ecosystem Approaches**
- **Regional Data Integration**
- **Coastal Land Acquisition**
- **Ecosystem Indicator Reporting**
- **Ecosystem Modeling**
- **Habitat Monitoring and Reporting**
- **International Enforcement**
- **International Capacity Building for Coral Reef Management**
- **Targeted Coral Reef Enforcement**
- **Offshore Aquaculture**
- **Ecosystems and Climate Change**
- **Dedicated Access (Fishery Quota) Programs**
- **Right Whale / Sea Turtle Recovery**



# Key Messages

- **NOAA has adopted an ecosystem approach to management as a guiding principle for its strategic plan**
- **An ecosystem approach to management will benefit all users of coasts, oceans and Great Lakes**
- **An ecosystem approach will require a better understanding and predictions of the system and its components**
- **NOAA's ecosystem approach to management is a collaborative effort with regional stakeholders that will take time**

# Ultimate Ecosystem



For more information: <http://ecosystems.noaa.gov/>  
Contact: [ecosystem.goal.comments@noaa.gov](mailto:ecosystem.goal.comments@noaa.gov) or  
301-713-9075